A Review of Chip Scale and BaLL Grid Array Assembly Reliability

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Abstract

Different aspects of advanced surface mount package technology have been investigated for aerospace applications. Three key areas included the assembly reliability of conventional Surface Mount, Ball Grid Arrays (BGAs), and Chip Scale Packages.

Reliability of BGAs was assessed as part of a consortium effort led by the Jet Propulsion Laboratory. Nearly 200 test vehicles, each with four packages, were assembled and tested using an experiment design. The most critical variables incorporated in the experiment were package type, board material, surface finish, solder volume, and environmental condition. The BGA test vehicles were subjected to thermal and dynamic environments representative of aerospace applications. The test vehicles were monitored continuously to detect electrical failure and their failure mechanisms were characterized.

A MicrotypeBGA consortium with industry-wide support was also organized to address technical issues regarding the interplay of package type, I/O counts, PWB (Printed Wiring Board) materials, and manufacturing variables. This paper will present only the most current thermal cycling test results for plastic BGA packages with 313 and 352 I/Os as well as failure mechanisms for ceramic BGA packages with 625 I/Os and plastic packages with 313 I/Os. The board level reliability of CSP assembly will also be reviewed and projected.

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IMAPS Nordic hereby invite you as a well known global expert to give a presentation in our next annual IMAPS Nordic conference in Stockholm September 20...23 in the area of your expertise, which we believe is reliability of solder joints and how to assure it. We ask to get a short abstract by May 1st to be published as conference invitation material, allthough we already consider the paper accepted,.
A commitment to participate is requested by June 1st.

We also ask if you could give a half day tutorial on Sunday Sept. 20 on a topic like Area array solder joint reliability assessment.

For more details please visit our web at
http://www.imapsnordic.a.se/imaps.html

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